CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER 90-153
NPDES NO. CA0037810

WASTE DISCHARGE REQUIREMENTS FOR:

CITY OF PETALUMA - WATER POLLUTION CONTROL PLANT
SONOMA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter Board) finds that:

1. The City of Petaluma (hereinafter called the discharger) submitted an NPDES permit application dated August 11, 1989, for reissuance and amendment of waste discharge requirements under the National Pollutant Discharge Elimination System, NPDES Permit No. CA0037810 for the City of Petaluma Water Pollution Control Plant.

2. The discharger is currently subject to NPDES permit CA0037810, Order No. 85-14 adopted February 20, 1985 allowing discharge to the Petaluma River, as amended by Order Nos. 86-26, and 89-179. Effluent limitations and toxic standards established pursuant to Sections 208(b), 301, 302, 304, 306, 307, 402, 403, and 405 of the Clean Water Act, and amendments thereto, apply to the discharge.

3. The Discharger presently discharges an average dry weather flow of 4.2 million gallons per day (MGD) from its secondary treatment plant located at 950 Hopper Street, Petaluma, Sonoma County, California. The plant has a dry weather design capacity of 5.20 MGD, and is considered to be a major facility. Treatment consists of primary sedimentation, biological treatment using trickling filters and activated sludge, secondary sedimentation, followed by aeration and oxidation in a 162 acre pond system (located approximately 2.5 miles southeast of the plant), chlorination and dechlorination. Sludge is treated by anaerobic and aerobic digestion. The facility treats a combined flow of domestic and industrial wastewater from the cities of Petaluma and Penngrove.

4. Treated effluent is discharged to surface waters, and reclaimed for irrigation. The treated wastewater is discharged into the Petaluma River, (a water of the State and United States) from October 21 to April 30, through a submerged diffuser about 100 feet offshore (Latitude 38 deg 12 min 33 sec - Longitude 122 deg 34 min 22 sec). From May 1 through October 20, treated wastewater is reclaimed for irrigation of agricultural land, and there is no river discharge. Treated wastewater is applied to a Golf Course located at Frates Road and Ely Road on a year round basis.

5. Discharges of reclaimed effluent to land are governed by Wastewater Reclamation Requirements in Order No. 88-036, adopted by the Board on March 16, 1988.

6. The discharger presently contracts with Envirotech Operating Services to operate the wastewater treatment and reclamation facilities.

7. The wastewater treatment process presently consists of the following: Influent wastewater is coarse screened and comminuted prior to being pumped to the aerated grit removal chamber. Grit is augered to a dumpster for disposal at a landfill. The flow then receives primary clarification (two clarifiers). The clarifiers generally have lower than expected removal efficiencies for settleable solids because of hydraulic overloading. Flows greater than 4.0 MGD are sent directly from primary clarification to the pond system. Flows under 4.0 MGD are split between two secondary treatment processes; up to 2.0 MGD is treated by biofiltration (three trickling filters in series), and up to 2.5 MGD goes through an activated sludge treatment process.

   Flows from the trickling filters and the activated sludge process are directed to secondary clarifiers and then to the pond system. The pond system consists of one aerated lagoon, with ten oxidation ponds following. The oxidation ponds cover an area of approximately 162 acres. Effluent from the ponds is chlorinated and dechlorinated prior to discharge either to the Petaluma River, or the reclamation project.

   Daily flows in excess of 8.0 MGD are pumped directly to the pond system from the headworks. Preliminary treatment of these excess flows consists of rag removal.

8. The solids handling process presently consists of the following: Solids digestion occurs in an aerobic reactor and conventional anaerobic digestors. A pipeline transports the aerobically digested sludge to the anaerobic digestors where it is further digested. The sludge is then dewatered by a centrifuge prior to landfilling.

9. The Regional Board adopted a revised Water Quality Control Plan for the San Francisco Bay Region (Basin Plan) on December 17, 1986, and the California State Water Resources Control Board approved the revised Basin Plan on May 21, 1987. The provisions of this permit are consistent with the objectives of the revised Basin Plan.

10. The Basin Plan identifies potential and existing beneficial uses of surface waters and marshes in the San Francisco Bay Basin Region, water quality objectives, effluent limitations and discharge prohibitions for waste discharges to surface waters, which are applicable to this discharge.

11. The beneficial uses of the Petaluma River and contiguous water bodies include:

    a. Water Contact Recreation
    b. Non-Contact Water Recreation
    c. Warm Fresh Water Habitat
    d. Cold Fresh Water Habitat
    e. Wildlife Habitat
    f. Preservation of Rare and Endangered Species
    g. Marine Habitat
    h. Fish Migration
    i. Fish Spawning
    j. Navigation

12. The existing facility does not provide sufficient capacity for adequate secondary treatment of all the wastewater flows prior to discharge to the pond system. The discharger is in the process of preparing design plans for upgrade and expansion of the existing treatment plant. The preliminary design is intended to accommodate the projected service area growth through the year 2005, as described in a report "Improvements and Expansion, Wastewater Treatment System, City of Petaluma, California" dated October 14, 1988, prepared by Envirotech Operating Services. Completion of the project is intended to increase the average dry weather flow treatment capacity to 10.0 MGD. This flow capacity is based on assumed growth values, and provision for a 25% reserve. The proposed design would reach 75% of capacity in the 20th year, at which time the dry weather flows to the plant would be 7.5 MGD.

13. Plant improvements, and any proposed expansion must be reviewed by the Regional Board staff. Any increased flows to the Petaluma River discharge location must be approved by the Board.

14. This permit does not allow an increase in treatment plant discharge beyond the presently permitted average dry weather flow capacity of 5.2 MGD. The discharger will need to apply to the Board for any increase in the permitted average dry weather flow treatment and discharge capacity. Such application will need to include, but may not be limited to, engineering reports documenting adequate reliability, capacity and performance of the completed improvements, and documentation that increased discharges will not result in degradation of receiving waters, or adverse impacts on beneficial uses of receiving waters, in accordance with State and Federal regulations.

15. This permit includes a schedule for construction of upgraded facilities at the treatment plant to provide for adequate and reliable secondary treatment. The discharger may, instead of upgrading existing facilities, choose to design and construct a new treatment plant.

16. The Basin Plan prohibits discharge of wastewater which has particular characteristics of concern to beneficial uses at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1. Order No. 85-14 included a prohibition of discharge of effluent at any point at which the wastewater does not receive an initial dilution of at least 10:1.

17. The Basin Plan states that exceptions to the 10:1 dilution requirement will be considered for discharges where:

    "a. an inordinate burden would be placed on the discharger relative to beneficial uses protected and an equivalent level of environmental protection can be achieved by alternate means, such as an alternative discharge site, a higher level of treatment, and/or improved treatment reliability; or

    b. a discharge is approved as part of a reclamation project; or

    c. it can be demonstrated that net environmental benefits will be derived as a result of the discharge."

18. As discussed in Finding 4, the Discharger has implemented a reclamation project during the summer months, and does not discharge to the Petaluma River between May 1 and October 20. This project has been developed in part because during the dry season, the Petaluma River probably does not receive adequate flushing to achieve a 10:1 dilution for the effluent.

19. A diffuser was installed at the outfall in the Petaluma River in the mid-seventies. The diffuser was intended to provide for compliance with the 10:1 dilution requirement. Because of question as to flow quantities in the Petaluma river, the influence of tidal action, and the drought, it is presently uncertain as to whether the effluent receives a 10:1 dilution during the months of discharge. This permit provides an opportunity for the discharger to demonstrate compliance with the 10:1 dilution requirement, based either on existing studies, or evaluations to be performed in the field. The discharger must either demonstrate that the discharge meets the 10:1 dilution requirement at all times during discharge, or apply for an exception to the prohibition.

20. The revised Basin Plan contains new effluent limitations for selected toxic pollutants such as heavy metals, including more stringent limits for discharges to shallow waters. For cases where compliance with the new limits is not feasible, the Basin Plan includes criteria under which a discharger may propose alternate effluent limits. The new shallow water limits will apply to the discharges governed by this Order if the Discharger is unable to demonstrate compliance with the 10:1 dilution requirement.

21. Order No. 85-14 required that the discharger provide a performance evaluation of the pond system, and resultant impacts on final effluent quality in order to develop and implement an operational procedure that would produce the best effluent quality that the existing facilities are capable of producing. A report, "City of Petaluma, Wastewater Stabilization Ponds, Algae Control Study" was submitted in March, 1988. This report provided an assessment of factors contributing to a major algae bloom which occurred in early 1985, and aspects of the treatment plant and pond operation that contribute to the control of algae growth in the ponds. Excess growth of algae in the pond system can result in violations of effluent limitations for biochemical oxygen demand (BOD) and suspended solids.

22. The major conclusions of the pond study were the following: (1) high BOD concentrations in the influent to the pond system contribute to algae growth in the stabilization ponds; (2) drawdown of pond elevations (particularly rapid drawdowns) for storage of effluent for reclamation is a major factor that contributes to algae growth; (3) approximately 50% of the BOD and suspended solids concentrations in the aerated lagoon effluent are removed in the first two stabilization ponds; and, (4) the shallowness of stabilization pond No. 10 contributes to algae growth and the suspension of clay material.

23. The major recommendations of the report were to modify the ponds and operating procedures as follows:

    a. Construct a second aerated lagoon within stabilization pond No. 1 to eliminate the high loading on the existing aerated lagoon and to

provide flexibility when the existing lagoon needs to be taken out of service;

b. Deepen stabilization pond No. 10 and the remainder of pond No. 1 in order to improve effluent quality; and,

c. Construct piping modifications to provide flexibility in use of the ponds prior to discharge of effluent.

24. The discharger has implemented the following measures to control algae growth in the ponds: (1) all sludge was removed from stabilization pond Nos. 1 and 2 in 1988 and 1989; (2) the intake structures at pond Nos. 7, 9 and 10 were deepened in late 1989 so that the effluent can be drawn from the lower layers of the pond below the heavier algae concentrated zone (implementation of a portion of Finding 23.c); and, (3) all tule growth from the banks of the aerated lagoon and the stabilization ponds were removed prior to March of 1990.

25. The discharger has not constructed a second aeration lagoon, deepened stabilization pond No. 10 and a portion of pond No. 1, or constructed all piping modifications as recommended in the March 1988 algae study. Pond No. 10 was not deepened because the soils at greater depth beneath the pond were found to be unsuitable for containment of effluent. Other recommended improvements were not completed primarily because grant money for algae control measures from the State Water Resources Control Board was used for treatment plant upgrades that would help reduce waste loading to the pond system.

26. Other algae reduction measures considered in the algae study include chemical addition (alum, lime, ferric chloride, ferric sulfate, copper sulfate, and chlorine), and algae removal facilities such as microscreening, chemical sedimentation, dissolved air flotation, centrifugation, sand filtration, rock filtration, living plant filtration, and overland flow.

27. The physical and operational characteristics of the stabilization ponds contribute to the suspended solids in the final effluent, as clay particles from the pond base are suspended by wave action. Algae growth also contributes to suspended solids. The Federal Secondary Treatment regulations recognize the inability of waste stabilization ponds to consistently meet standard secondary treatment requirements and therefore allow alternative limitations when they are consistent with proper operation and maintenance of the facility. The suspended solids effluent limitation in B.1 reflect alternative limits allowed by Federal Regulations.

28. The alternative suspended solids effluent limitation in B.1 will not have a significant adverse impact on water quality in the Petaluma River during the period of allowable discharge, as it will not add significantly to the naturally high suspended particulate matter in the river which is increased by winter watershed runoff flows.

29. The Regional Board has considered antidegradation pursuant to 40 CFR 131.12, and State Board Resolution No. 68-16 relative to the permitted discharge. As a result of this consideration, an antidegradation

which is already permitted; therefore, a detailed antidegradation assessment was not made for this reissuance. A detailed antidegradation evaluation will be reviewed as part of the Discharger's application for an increase in capacity and discharge volume, which is anticipated within the next five years, and will be necessary prior to authorization of any increase in average dry weather flow capacity.

30. An Operation and Maintenance Manual is maintained by the Discharger for purposes of providing plant and regulatory personnel with a source of information describing all equipment, facilities, recommended operation strategies, process control monitoring, and maintenance activities. In order to remain a useful and relevant document, the manual should be kept updated to reflect significant changes in the treatment facilities or their operations.

31. This Order serves as an NPDES permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21100) of Division 13 of the Public Resources Code (California Environmental Quality Act) pursuant to Section 13389 of the California Water Code.

32. The discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity for a public hearing and the opportunity to submit their written views and recommendations.

33. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, that the discharger, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted thereunder, and the provisions of the Clean Water Act as amended and regulations and guidelines adopted thereunder, shall comply with the following:

A. DISCHARGE PROHIBITIONS

1. Bypass or overflow of untreated or partially treated wastewater to waters of the State either at the treatment plant or from any of the collection system and pump stations tributary to the treatment plant is prohibited.

2. The average dry weather flow shall not exceed 5.2 MGD. The average shall be determined over three dry consecutive months each year.

3. The discharge of effluent at any place where it does not receive a minimum initial dilution of at least 10:1 is prohibited.

4. The discharge of wastewater to the Petaluma River is prohibited from May 1 through October 20 of each year. For emergency situations, such as extreme weather conditions which disturb the normal wastewater irrigation schedule, the Executive Officer may authorize discharge prior to October 20 or subsequent to May 1 for limited time periods.

B. EFFLUENT LIMITATIONS

(i) The following effluent limitations shall apply to the discharge until it is demonstrated, in accordance with Provision F.4 of this Order, that the effluent is not meeting the 10:1 dilution requirement.

1. Effluent discharged during the period October 21 through April 30 shall not exceed the following limits:

| Constituent | Units | 30-day Average | 7-day Average | Daily Maximum | Instantaneous Maximum |
|---|---|---|---|---|---|
| a. Biochemical Oxygen Demand | mg/l | 30 | 45 | 60 | — |
| b. Total Suspended Solids | mg/l | 45 | 65 | 70 | -- |
| c. Settleable Solids | ml/l-hr | 0.1 | -- | -- | 0.2 |
| d. Total Chlorine Residual (1) | mg/l | -- | -- | -- | 0.0 |
| e. Oil and Grease | mg/l | 10 | -- | 20 | -- |

(1) Requirement defined as below limit of detection in standard test methods.

2. The monthly average of the biochemical oxygen demand (five-day, 20° C) and suspended solids values, by weight for effluent samples collected during a calendar month shall not exceed 15 percent of the monthly average of the respective values, by weight, for influent samples collected at approximately the same times during the same period (85 percent removal, monthly average minimum).

3. The pH of the discharge shall not exceed 9.0 nor be less than 6.0.

4. The moving median value for the Most Probable Number (MPN) of total coliform bacteria in any seven (7) consecutive effluent samples shall not exceed 23 MPN per 100 milliliters (23 MPN/100 ml). Any single sample shall not exceed 240 MPN/100 ml.

5. The survival of test fishes acceptable to the Board in 96-hour bioassays of the effluent shall be a median of 90 percent survival of three consecutive samples, and a 90 percentile value of not less than 50 percent survival based on the ten most recent consecutive samples.

6. Representative samples of the effluent shall not exceed the following limits in micrograms per liter (ug/l): (1) (2)

| Constituent | Unit of Measurement | Daily Average |
|---|---|---|
| a. Arsenic | ug/l | 20 |
| b. Cadmium | ug/l | 30 |
| c. Chromium (VI) (3) | ug/l | 10 |
| d. Copper | ug/l | 200 |

| | | | |
|---|---|---|---|
| e. | Lead | ug/l | 56 |
| f. | Mercury | ug/l | 1 |
| g. | Nickel | ug/l | 71 |
| h. | Silver | ug/l | 23 |
| i. | Zinc | ug/l | 500 |
| j. | Cyanide | ug/l | 25 |
| k. | Phenolic Compounds | ug/l | 500 |
| l. | PAHs (4) | ug/l | 150 |

(1) These limits are intended to be achieved through a combination of Best Available Technology, source control, and application of pretreatment standards.

(2) Daily Average means the average of all flow-weighted composite samples collected over a 24-hour period.

(3) The discharger may at its option meet this limit as total chromium.

(4) Polynuclear Aromatic Hydrocarbons (PAHs). This limit applies to the summation of the detected levels of the individual constituent PAHs as identified by EPA Method 610 (ie Total PAHs). If a discharge exceeds this limit, the concentrations of individual constituents shall be reported.

(ii) <u>For discharges which receive a river to wastewater dilution of less than 10:1,</u>

Note: These effluent limitations will apply in the event that the discharger is unable to demonstrate that the effluent receives an initial dilution of 10:1, pursuant to Provision F.4.

1. Effluent discharged during the period October 21 through April 30 shall not exceed the following limits:

| Constituent | Units | 30-day Average | 7-day Average | Daily Maximum | Instantaneous Maximum |
|---|---|---|---|---|---|
| a. Biochemical Oxygen Demand | mg/l | 30 | 45 | 60 | — |
| b. Total Suspended Solids | mg/l | 45 | 65 | 70 | -- |
| c. Settleable Solids | ml/l-hr | 0.1 | -- | -- | 0.2 |
| d. Total Chlorine Residual (1) | mg/l | -- | -- | -- | 0.0 |
| e. Oil and Grease | mg/l | 10 | -- | 20 | -- |

(1) Requirement defined as below limit of detection in standard test methods.

2. The monthly average of the biochemical oxygen demand (five-day, 20° C) and suspended solids values, by weight for effluent samples collected during a calendar month shall not exceed 15 percent of the monthly average of the respective values, by weight, for influent samples collected at approximately the same times during the same period (85 percent removal, monthly average minimum).

3. The pH of the discharge shall not exceed 8.5 nor be less than 6.5.

4. The moving median value for the Most Probable Number (MPN) of total coliform bacteria in any seven (7) consecutive effluent samples shall not exceed 23 MPN per 100 milliliters (23 MPN/100 ml). Any single sample shall not exceed 240 MPN/100 ml.

5. The survival of test fishes acceptable to the Board in 96-hour bioassays of the effluent shall be a median of 90 percent survival of three consecutive samples, and a 90 percentile value of not less than 70 percent survival based on the ten most recent consecutive samples.

6. Representative samples of the effluent shall not exceed the following limits in micrograms per liter (ug/l): (1) (2)

| Constituent | Unit of Measurement | Daily Average |
|---|---|---|
| a. Arsenic | ug/l | 20 |
| b. Cadmium | ug/l | 10 |
| c. Chromium (VI) (3) | ug/l | 11 |
| d. Copper | ug/l | 20 |
| e. Lead | ug/l | 5.6 |
| f. Mercury | ug/l | 1 |
| g. Nickel | ug/l | 7.1 |
| h. Silver | ug/l | 2.3 |
| i. Zinc | ug/l | 58 |
| j. Cyanide | ug/l | 25 |
| k. Phenolic Compounds | ug/l | 500 |
| l. PAHs (4) | ug/l | 15 |

NOTE: The footnotes that apply in Section B.(i) of this permit also apply to this section.

C. POND LIMITATIONS

1. A minimum freeboard of at least 2 feet shall be maintained in all ponds.

2. All ponds shall be protected against erosion, washout and flooding from a flood having a predicted frequency of once in 100 years.

D. RECEIVING WATER LIMITATIONS

1. The discharge of waste shall not cause the following conditions to exist in waters of the State at any place:

   a. Floating, suspended, or deposited macroscopic particulate matter or foam;

   b. Bottom deposits or aquatic growths;

   c. Alteration of temperature, turbidity, or apparent color beyond present natural background levels;

   d. Visible, floating, suspended, or deposited oil or other products of petroleum origin;

   e. Toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption either at levels created in the receiving waters or as a result of biological concentration.

2. The discharge of waste shall not cause the following limits to be exceeded in waters of the State in any place within one foot of the water surface:

   a. Dissolved Oxygen — 5.0 mg/l, minimum.

      The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the dissolved oxygen content at saturation. When natural factors cause lesser concentrations than those specified above, then the discharge shall not cause further reduction in the ambient dissolved oxygen concentration.

   b. Dissolved Sulfide — 0.1 mg/l, maximum

   c. pH — Variation from normal ambient pH by more than 0.5 pH units.

   d. Un-ionized Ammonia — 0.025 mg/l as N, annual median; 0.16 mg/l as N, maximum.

   e. Nutrients — 50 ug/l chlorophyll "a", maximum

3. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order in accordance with such more stringent standards.

E. SLUDGE HANDLING AND DISPOSAL REQUIREMENTS

1. All sludge treatment, processing, storage or disposal activities under the Discharger's control shall be in compliance with current state and federal regulations, including general conditions and definitions specified in the Interim Sludge Management Program provided by the State Water Resources Control Board by a memorandum dated March 29, 1990. This document, developed in accordance with NPDES Sewage Sludge Permit Regulations and State Sewage Sludge Management Program Requirements (40 CFR 501), and the Sewage Sludge Interim Permitting Strategy, September 1989, is hereby incorporated as part of this Order (see attachment).

2. The Board may amend this Order prior to the expiration date if necessary to accommodate changes in applicable state or federal sludge regulations, or changes in the Discharger's sludge management procedures.

3. The Discharger shall notify the Board, in writing, of any significant changes in its sludge disposal practices.

4. Permanent sludge storage or disposal activities are not authorized by this permit. A Report of Waste Discharge shall be filed and the site brought into compliance with all applicable regulations prior to commencement of any such activity by the Discharger.

5. The treatment, processing, storage or disposal of sludge by the Discharger shall not create a condition of pollution or nuisance as defined in Section 13050 (l) and (m) of the California Water Code.

6. The treatment, processing, storage or disposal of sludge by the Discharger shall not cause waste material to be discharged to, or deposited in, waters of the State.

7. Sludge storage facilities under the Discharger's control shall be operated and maintained in such a manner as to provide adequate protection from surface runoff, erosion, or other conditions which would cause drainage from the waste materials to escape from the storage facility site(s). The sludge storage site shall have facilities adequate to divert surface runoff from adjacent areas. Adequate protection is defined as protection from at least a 100-year storm and protection from the highest possible tidal stage that may occur.

8. The discharge to the Discharger's storage facilities of waste other than sewage sludge produced by the Discharger's wastewater treatment facility is prohibited, with the exception of approximately 120,000 gallons per year of alum sludge generated by the City of Petaluma's water treatment plant (this sludge is discharged to the aerobic digestor).

9. The storage of sludge shall not cause degradation of groundwaters.

10. General Provisions A.9 and A.12 of this Board's "Standard Provisions and Reporting Requirements", dated December 1986, apply to sludge handling and disposal practices.

11. The term 'sludge' as used in this permit is defined in Definition E.18 of this Board's "Standard Provisions and Reporting Requirements", dated December 1986.

F. PROVISIONS

1. The requirements prescribed by this Order supersede the requirements prescribed by Order No. 85-14 adopted on February 20, 1985. Order No. 85-14 is hereby rescinded.

2. The Discharger shall comply with all sections of this Order immediately upon adoption.

3. Upgrade of the Wastewater Treatment Plant

In order to provide for adequate and reliable secondary treatment, the Discharger shall construct and utilize improvements of the treatment plant according to the following time schedule:

| Task | Date |
|---|---|
| a. Submit a report which includes plans for upgrade of the treatment plant to provide for adequate and reliable secondary treatment of the wastewater. This report shall include documentation of adequate treatment reliability, capacity, and performance of the proposed improvements. Any application for increased flows must include documentation that the increased discharges will not result in degradation of receiving waters, or adverse impacts on beneficial uses of receiving waters, in accordance with State and Federal regulations. | July 1, 1991 |
| b. Submit a status report on any environmental review process necessary prior to construction. | December 1, 1991 |
| c. Begin construction of the upgraded facility in accordance with plant improvement plans as submitted and reviewed pursuant to Task (a). | May 1, 1992 |
| d. Construction of the upgraded wastewater facility shall be completed and fully operational. | April 30, 1994 |
| e. Documentation that construction is complete and plant fully operational. | July 1, 1994 |

4. Effluent 10:1 Dilution Evaluation

The Discharger shall demonstrate compliance with Prohibition A.3, or apply for an exception to the prohibition in accordance with the time schedule specified below:

a. The discharger shall submit a report, by February 15, 1991, demonstrating, to the satisfaction of the Executive Officer, that the discharge of effluent to the Petaluma River receives an initial dilution of 10:1. If this report results in a determination by the Discharger, or the Executive Officer, that a 10:1 dilution cannot be demonstrated utilizing historical studies and data, the discharger shall either conduct a dispersion study to determine the actual dilution and transport of the effluent upon discharge to the river, or apply for an exception to the 10:1 dilution requirement.

b. If the Discharger chooses to apply for an exception to the 10:1 dilution requirement, an application shall be submitted within 45 days of the Discharger's, or the Executive Officer's, determination that an initial dilution of 10:1 has not been demonstrated based on the report submitted pursuant to Provision 4.a. In addition to consideration of the exception criteria outlined in Finding 16, the application shall include, at a minimum, information pertaining to efforts made towards maximizing the volume of wastewater utilized for reclamation.

c. If the discharger chooses to conduct a dispersion study, the study shall be done during strong and weak tidal cycles, and at times when the effects of storm events, and the absence of storm events, can be monitored [see 40 CFR 125.61(a)]. The discharger shall implement the dispersion study according to the following time schedule:

| Task | Deadline |
|---|---|
| Submit a plan for implementing the dispersion study for approval by the Executive Officer. | May 1, 1991 |
| Implement the dispersion study. | December 1, 1991 |
| Submit the results of the approved study. | May 1, 1992 |

5. If the dispersion study performed pursuant to Provision F.4.c results in a determination by the Discharger, or the Executive Officer, that the effluent does not receive an initial dilution of 10:1, then the Discharger shall apply for the Board's consideration of an exception to the 10:1 dilution. Such application shall be submitted within 45 days of determination by the Discharger, or the Executive Officer that the 10:1 dilution requirement is not met.

6. Sludge shall be removed from the aeration pond, and any oxidation pond as necessary, at appropriate intervals in order to maintain the

conditions for optimum treatment efficiency. The oxidation ponds shall be closely monitored for algae growth. Documentation of these maintenance activities and monitoring shall be included in the monthly self-monitoring reports.

7. The Discharger shall submit a report, by May 1, 1991, which proposes mitigation measures to be implemented in the event that there are indications that the effluent limitations will be violated due to adverse conditions in the ponds. If there are indications that algae growth may contribute to non-compliances with effluent limitations, the proposed mitigation measures, or other measures as specified by the Executive Officer, shall be implemented to remediate the problem.

8. The discharge of toxic substances shall be minimized through diligent implementation of a source control program and proper municipal wastewater treatment. The discharger shall maintain a program which will identify and minimize sources of toxic substances resulting from accidental spills and inadequate storage or handling of hazardous materials.

9. Where concentration limitations in mg/l are contained in this permit, the following mass emission rates shall also apply:

$$\text{Mass Emission Rate, in kg/day} = (CL) \times (3.785) \times (Q)$$
$$[\ \text{in lb/day} = (CL) \times (8.345) \times (Q)\ ]$$

where:
- CL = Concentration Limit, in mg/l;
- 3.785 = conversion factor, for kg/day;
- 8.345 = conversion factor, for lb/day;
- Q = Discharge Flow Rate, in mgd, averaged over the time interval to which the limit applies.

10. The Discharger shall comply with the attached Self-Monitoring Program as adopted by the Board and as may be amended by the Executive Officer pursuant to federal regulations (40 CFR 122.63).

11. The Discharger shall comply with all applicable items of the attached "Standard Provisions, Reporting Requirements and Definitions" dated December 1986.

12. The Board may modify, or revoke and reissue, this Order and Permit if present or future investigations demonstrate that the discharges governed by this Order are causing or significantly contributing to adverse impacts on water quality and/or beneficial uses of the receiving waters.

13. The Discharger shall review and update its Operations and Maintenance Manual annually, or within 90 days of completion of any significant facility or process changes. The Discharger shall submit to the Board, by April 15th of each year, a letter describing the results of the review process including an estimated time schedule for completion of any revisions determined necessary, and a description or copy of any completed revisions.

14. The Discharger shall review and update as necessary, by December 31, annually, its contingency plan as required by Board Resolution No. 74-10. The discharge of pollutants in violation of this Order where the Discharger has failed to develop and/or implement a contingency will be basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code.

15. The Discharger shall implement and enforce its approved pretreatment program in accordance with Board Order 89-179 and its amendments thereafter. The discharger's responsibilities include, but are not limited to:

    a. Enforcement of National Pretreatment Standards (eg., prohibited discharges, categorical Pretreatment Standards, and local limits) in accordance with 40 CFR 403.5 and Sections 307 (b) and (c) of the Clean Water Act.

    b. Implementation of the pretreatment program in accordance with the legal authorities, policies, procedures, and financial provisions described in the General Pretreatment Regulations (40 CFR 403) and the Discharger's approved pretreatment program including subsequent modifications to the program.

    c. Submission of annual and quarterly reports to EPA and the State as described in Board Order 89-179 and its amendments thereafter.

16. This Order expires December 12, 1995. The discharger must file a Report of Waste Discharge in accordance with Title 23, Chapter 3, Subchapter 9 of the California Administrative Code not later than 180 days in advance of such expiration date as application for issuance of new waste discharge requirements.

17. This Order shall serve as a National Pollutant Discharge Elimination System Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objections. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

I, Steven R. Ritchie, Executive Officer do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Board, San Francisco Bay Region on December 12, 1990.

STEVEN R. RITCHIE
Executive Officer

Attachments:
Standard Provisions & Reporting Requirements, December 1986
General Conditions and Definitions for Interim Sludge Management
Self-Monitoring Program
Resolution 74-10

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM
FOR

CITY OF PETALUMA WATER POLLUTION CONTROL PLANT

PETALUMA, SONOMA COUNTY, CALIFORNIA

NPDES NO. CA0037810

ORDER NO. 90-153

CONSISTS OF

PART A, dated December 1986

AND

PART B

PART B

(SELF-MONITORING PROGRAM for CITY OF PETALUMA WATER POLLUTION CONTROL PLANT)

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT

| Station | Description |
|---|---|
| A-001 | At any point in the treatment facilities headworks at which all waste tributary to the system is present and prior to any phase of treatment. |

B. EFFLUENT

| Station | Description |
|---|---|
| E-001 | At any point in the outfall from the treatment facilities between the point of discharge and the point at which all waste tributary to that outfall is present, and at which point in the disinfection facilities where adequate contact with the disinfectant is assured. |
| E-001-S | At any point in the treatment and disposal facilities following dechlorination. |

C. RECEIVING WATERS

| Station | Description |
|---|---|
| C-1 | At a point in Petaluma River directly above the center of the diffuser. |
| C-2-A<br>C-2-B | At points in Petaluma River located 500 feet upstream and downstream, respectively, of the center of the diffuser. |
| C-R | At a point in Petaluma River located 2000 feet downstream from the diffuser. |

D. LAND OBSERVATIONS

| Station | Description |
|---|---|
| P-1 thru -'n' | Located at the corners and midpoints of the perimeter fenceline surrounding the treatment facilities. |

NOTE: A sketch showing the locations of all receiving water and land observation stations shall be submitted with each monthly report, and with each annual report.

E. OVERFLOWS AND BYPASSES

| Station | Description |
|---|---|
| O-1 thru O-'n' | Bypass or overflows from manholes, pump stations or collection system. |

F. SLUDGE

The Discharger shall continue to analyze sludge pursuant to the pretreatment requirements of Order 89-179.

II. SCHEDULE OF SAMPLING AND ANALYSIS

The schedule of sampling and analysis shall be that given in Table I.

III. MODIFICATION OF PART A, DATED DECEMBER 1986

Paragraph C.5 of Part A is revised to read:

Average weekly and average monthly values are calculated as the sum of all daily discharge values measured during the specified period (calendar week or calendar month), divided by the number of daily discharge values measured during that specified period.

IV. REPORTING REQUIREMENTS

A. General Report Requirements are described in Section C of this Board's "Standard Provisions and Reporting Requirements", dated December 1986.

B. Self-Monitoring Reports for each calendar month shall be submitted monthly,k by the fifteenth day of the following month. The required contents of these reports are described in Section G.4 of Part A.

C. An Annual Report for each calendar year shall be submitted to the Board by January 30 of the following year. The required contents of the annual report are described in Section G.5 of Part A.

D. Any overflow, bypass or significant non-compliance incident that may endanger health or the environment shall be reported according to Sections G.1 and G.2 of Part A.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 90- .

2. Has been amended and ordered by the Board on December 12, 1990.

3. May be revised by the Executive Officer pursuant to federal regulations (40 CFR 122.36); other revisions may be ordered by the Board.

STEVEN R. RITCHIE
Executive Officer

Attachments:

A. Table 1
B. Location Map, Receiving Water Monitoring Stations

## TABLE 1

## SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

| SAMPLING STATION | A-001 | | E-001 | | | E-001-S | | | - | All C Sta. | | All P Sta. | All Q Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TYPE OF SAMPLE | C-24 | cont | G | C-24 | cont | G | C-24 | cont | | G | | O | O |
| | | | | | | | | | | | | | |
| Flow Rate (mgd) | | D (1) | | | D (1) | | | | | | | | |
| BOD, 5-day, 20°C (mg/l & kg/day) | 3/W | | | 3/W | | | | | | | | | |
| Total Suspended Solids (mg/l & kg/day) | 3/W | | | 3/W | | | | | | | | | |
| Settleable Solids (ml/l-hr) | | | D | | | | | | | | | | |
| Oil and Grease (mg/l & kg/day) | M | | | M (2) | | | | | | | | | |
| Chlorine Residual, (3) & Dosage (mg/l & kg/day) | | | | | cont or 2H | (4) | | cont or 2H | | | | | |
| Coliform, Total (MPN/100 ml) | | | | | | D (6) | | | | | | | |
| Toxicity, 96-hr Bioassay (% Survival) | | | | | | | M (7) | | | | | | |
| Turbidity (NTU) | | | | | | 2/M | | | | M | | | |
| pH (units) | | | | | | D | | | | M | | | |
| Temperature (°C) | | | | | | D | | | | M | | | |
| Dissolved Oxygen (mg/l & % Saturation) | | | | | | D | | | | M | | | |
| Sulfides, Total & D'solved (if DO < 2.0 mg/l) (mg/l) | | | | | | D | | | | | | | |
| Arsenic (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Cadmium (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Chromium (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Copper (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Lead (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Mercury (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Nickel (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Selenium (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Silver (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Zinc (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |
| Cyanide (mg/l or ug/l, & kg/day) | | | | | | | M | | | | | | |

TABLE 1

SCHEDULE FOR SAMPLING, MEASUREMENTS, AND ANALYSIS

| SAMPLING STATION | A-001 | | E-001 | | | E-001-S | | | | All C Sta. | | All P Sta. | All O Sta. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TYPE OF STATION | C-24 | cont | G | C-24 | cont | G | C-24 | cont | | G | | O | O |
| | | | | | | | | | | | | | |
| Phenolic Compounds (mg/l or ug/l, & kg/day) | | | | M | | | | | | | | | |
| PAHs (mg/l or ug/l, & kg/day) | | | | M(9) | | | | | | | | | |
| Ammonia Nitrogen (mg/l & kg/day) | | | | M | | | | | | M | | | |
| Nitrate Nitrogen (mg/l & kg/day) | | | | M(8) | | | | | | M(8) | | | |
| Total Organic Nitrogen (mg/l & kg/day) | | | | M(8) | | | | | | M(8) | | | |
| Total Phosphate (mg/l & kg/day) | | | | M(8) | | | | | | M(8) | | | |
| Un-ionized Ammonia Nitrog. (mg/l) | | | | | | | | | | M | | | |
| Total Dissolved Solids (mg/l) | | | | | | | | | | M(10) | | | |
| Conductivity (umhos/cm) | | | | | | | | | | M | | | |
| Hardness (mg/l as $CaCO_3$) | | | | | | | | | | M | | | |
| Chlorophyll-a (ug/l) | | | | | | | | | | M | | | |
| Silica (mg/l) | | | | | | | | | | M | | | |
| Secchi Disk (inches) | | | | | | | | | | M | | | |
| Apparent Color (visual observation) | | | | | | | | | | M | | | |
| Organochloro Pesticides & PCB's (mg/l or ug/l, & kg/day | | | | M | | | | | | | | | |
| All Applicable Standard Observations | | | | | | | | | | M | | M | E |

LEGEND FOR TABLE

TYPES OF SAMPLES

G = grab sample
C-24 = composite sample - 24-hour
Cont = continuous sampling
O = observation

TYPES OF STATIONS

E = waste effluent stations
A = treatment facility influent stations
C = receiving water stations
P = treatment facilities perimeter stations
L = basin and/or pond levee stations

FREQUENCY OF SAMPLING

E = each occurence
D = once each day
W = once each week
2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/M = 2 days per month
2H = every 2 hours
2D = every 2 days
2W = every 2 weeks
3M = every 3 months
Cont = continuous

FOOTNOTES FOR TABLE 1

1. Flows shall be monitored continuously, and the following shall be reported on a daily basis: (a) influent, average daily flow; and, (b) effluent, total flow. Records of maximum and minimum flow rates, and times of occurrence shall be maintained, and made available upon request.

2. Oil and Grease sampling shall consist of three (3) grab samples taken at equal intervals during the sampling day, with each grab sample being collected in a glass container. The grab samples shall be mixed in proportion to the instantaneous flow rates occurring at the time of each grab sample, within an accuracy of plus or minus five percent (5%). The combined sample shall be analyzed as a composite.

3. Chlorine dosage shall be reported in mg/l and kg/day on a daily basis.

4. Chlorine residual (maximum and minimum) shall be reported in mg/l on a daily basis.

5. Chlorine residual in de-chlorinated effluent (E-001-S) shall be reported in mg/l on a daily basis. If a violation is detected, the maximum and average concentrations and duration of each non-zero residual event shall be reported, along with the cause and corrective actions taken.

6. Coliform sampling frequency may be reduced to 3/W (three days per week) during any week when effluent will not be used for irrigation.

7. Toxicity shall be determined using parallel, 96-hour flow-through bioassays with undiluted, disinfected, dechlorinated effluent, as specified in Provision E.7. One species shall be three-spined stickleback, and the other shall be either rainbow trout or fathead minnow. Results shall be reported as percent survival.

   The pH, Dissolved Oxygen, and Temperature of the test stream shall be monitored on at least a daily basis for the duration of the bioassay tests, and the results reported.

8. Monitoring for nitrate nitrogen, total organic nitrogen, and total phosphate shall be done monthly for one year only following issuance of this self-monitoring program.

9. Polynuclear Aromatic Hydrocarbons (PAHs), as identified by EPA Method 610, or equivalent approved EPA Methods. If a sample exceeds the PAH effluent limitation, the concentrations of individual constituents PAHs shall be reported.

10. Total Dissolved Solids measurements may be based on conductivity measurements.

GENERAL NOTES FOR TABLE 1

1. During any time when bypassing occurs from any treatment phase(s) in the treatment facilities, the monitoring program for effluent discharged from the plant shall include the following in addition to the above schedule for sampling, measurement and analyses:

   a. Composite sampling of the discharge on an hourly basis for the duration of the bypass event, for BOD, Total Suspended Solids, and oil and grease analyses. Grab samples at least daily for the duration of the bypass event for Total Coliform, Settleable Matter, and oil and grease analyses.

   b. Continuous monitoring or hourly grab samples for chlorine residual measurement, and continuous monitoring of bypassed flow.

   c. Daily receiving water sampling and observations shall be performed until it is demonstrated that no adverse impact on the receiving water is detected.

2. Percent removal for BOD and Suspended Solids (effluent v. influent) shall also be reported.

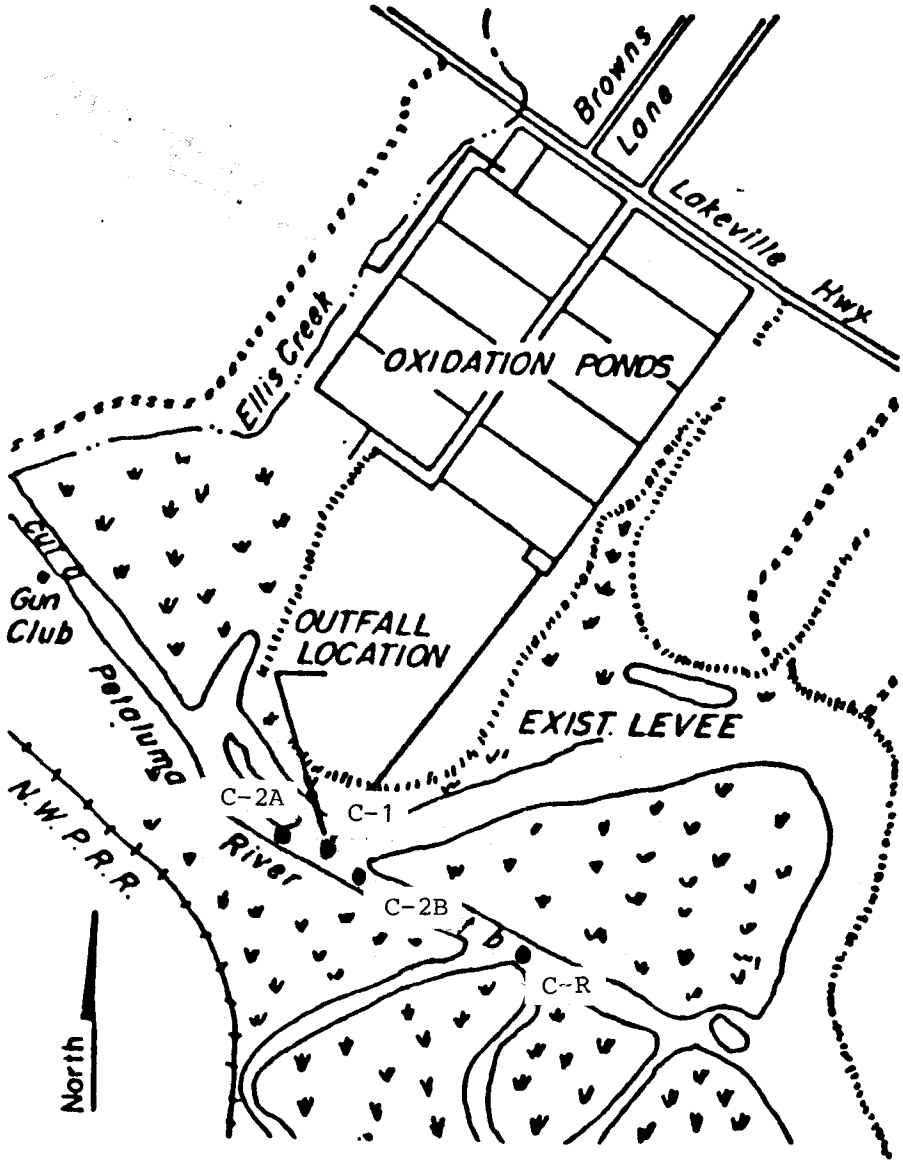
3. Grab samples shall be taken on day(s) of composite sampling.

4. If any effluent sample is in violation of limits, sampling shall be increased for that parameter to at least daily or greater until compliance is demonstrated in two successive samples. Receiving water violations shall be reported in the monthly report; increased receiving water monitoring may be required.

5. Chlorine residual analyzers shall be calibrated against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, grab samples shall be taken every 30 minutes until compliance is achieved.

6. Receiving water monitoring is to be done by high water slack tide sampling.

7. All flow other than to the outfall (e.g. sludge) shall be reported monthly. Daily records shall be kept of the quantity and solids content of dewatered sludge disposed of and the location of disposal.




Receiving Water Sampling Locations
Drawing Not to Scale
(locations are approximate)